

**Notice of Allowability**

Application No.

10/695,328

Applicant(s)

KELLAR ET AL

Examiner

Beth E. Owens

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**-- The MAILING DATE of this communication appears in the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the preliminary amendment filed 26 May 2004.
2. ☒ The allowed claim(s) is/are 8-14.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 10272003
- ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
- ☒ Examiner's Amendment/Comment
- ☒ Examiner's Statement of Reasons for Allowance
- ☐ Other \_\_\_\_\_

  
RICHARD ELMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

*Examiner's Amendment*

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

In the Title:

Replace the title with "Wafer Bonding Using a Flexible Bladder Press for Three Dimensional (3D) Vertical Stack Integration".

In the Specification:

Page 6, line 3: replace "glue" with --glues--.

Page 6, line 3: replace "adhesive" with --adhesives--.

Page 6, line 12: replace "100" with --110--.

Page 6, line 14: replace "Aluminum" with --aluminum--.

Page 6, line 15: replace "Copper" with --copper--.

Page 7, line 16: replace "Copper" with --copper--.

Page 10, line 2: replace "Chemical Mechanical Polish" with --chemical-mechanical polishing--.

In the Claims:

Claim 9, line 2: replace "Copper" with --copper--.

Claim 9, line 2: replace "surface" with --surfaces--.

*Allowance*

2. Claims 8-14 are allowed.
3. The following is an Examiner's statement of reasons for allowance:

There is no prior art available nor obvious motivation to combine elements of prior art which teach a wafer bonding method, comprising selectively forming metallic bumps on opposing surfaces of adjacent wafers each including one or more integrated circuit (IC) devices; selectively aligning the adjacent wafers to form a stack; and bonding the metallic bumps on the surface of one wafer with the metallic bumps on the surface of the other wafer to establish electrical connections between active IC devices on the adjacent wafers using a flexible bladder press to account for height differences of the metallic bumps across the opposing surfaces of the adjacent wafers.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. The closest prior art is by Eldridge (6,468,098). Eldridge in his teachings "Electrical Contactor Especially Wafer Level Contactor Using Fluid Pressure" uses a flexible wiring structure having a plurality of first contact elements and a fluid containing structure which is coupled to the flexible wiring structure which, when filled with liquid, presses the flexible wiring layer

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towards a device or substrate under test and by causing a pressure differential between the first side and a second side of the flexible wiring structure causes a plurality of contact terminals of varying height to electrically connect.

5. Now that the claims have been allowed, Applicant is required to supply formal drawings corresponding to the informal drawings filed 27 October 2003, which have been approved by Examiner. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

### *Conclusion*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth E. Owens, Ph.D. whose telephone number is 571.272.1882 and fax number for unofficial communications is 571.273.1882.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms, can be reached on 571.272.1869. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306 for official communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571.272.2800.

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